

REMARKS

Claims 1-26 are pending in this application, with claims 5-10 and 17-22 having been withdrawn from consideration as being directed to a non-elected invention. By this Amendment, claims 1 and 15 have been amended. No new matter has been introduced by these amendments.

CLAIM REJECTIONS

Claims 1-4, 11-16 and 23-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Stinson (U.S. Patent No. 5,891,191). Claims 1-4, 11-16 and 23-26 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over Stinson in view of Japanese Patent No. 2002-363675A (hereinafter "JP '675"). To the extent they are still applicable in view of the amendments set forth herein, Applicants respectfully traverse these rejections.

The Co-Cr-Mo alloy fine wire of the present invention consists of 26 to 31 weight % of Cr; more than 8 weight % to 16 weight % of Mo; and the remainder of Co and inevitable impurities. The fine wire has a diameter of 200 micrometers or less, and a degree of roundness (minor diameter/major diameter) of lateral cross section of 0.6 or more. The fine wire of the presently-claimed invention has a structure made by injecting the melted Co-Cr-Mo alloy from a nozzle to form a melted alloy jet, and cooling and solidifying the melted alloy jet. According to one embodiment (claim 1), the fine wire has a uniform structure with a concentration ratio of maximum Mo concentration phase with respect to minimum Mo concentration phase of 1.8 or less when Mo concentration is measured at one or more arbitrarily selected cross sections of said fine wire. According to another

embodiment (claim 15), the internal structure of the fine wire is composed of either gamma phase (Co base solid solution of face-centered cubic system) or epsilon phase (Co base solid solution of hexagonal close-packed system) only, or both of them only.

The claimed invention provides an improve structure in the fine wire, which allows the degree of elongation of the fine wire to be increased. Applicants submit that simply providing an alloy product with components within the claimed concentration ranges does not result in the fine wire having the properties set forth in the presently claimed invention. For example, Manufacturing Example 3 in Applicants' specification describes a composition in which the component concentration ranges are within the claimed ranges, but the wire that is produced does not have the ratio of high Mo concentration phase to low Mo concentration phase set forth in independent claim 1.

Stinson discloses wires that are substantially homogeneous in component concentration, *i.e.*, have a uniform concentration of Co, Cr and Mo throughout the wire. See Stinson, col. 5 lines 5-11. Stinson does not disclose or suggest a concentration ratio of a high Mo concentration phase with respect to a low Mo concentration phase of 1.8 or less, as recited in independent claim 1. It is by optimizing the concentration ratio of low Mo concentration phase and high Mo concentration phase that a wire with excellent ductility and processability is obtained. See Specification, paragraphs 14 and 18. Stinson discloses wire that is produced by a different process, *i.e.*, drawing, and the wire disclosed in Stinson fails to exhibit the solidified structure as set forth in the presently-claimed invention. Stinson fails to disclose a wire produced by a melt spinning method. Therefore, Applicants respectfully submit that the claimed invention is not obvious over Stinson.

Stinson also does not show that the content of Ni and C in the wire is zero, and that segregation of Mo at concentrations of 8 % can be prevented, thereby preventing breakage of the wire during drawing and bending. In contrast, in the present invention, the content of Ni and C is zero, except for amounts of Ni and C that may be present as inevitable impurities.

JP '675 discloses a Co based alloy containing 6 to 12% of Mo. However, JP '675 fails to teach a uniform concentration of Mo. Therefore, even if Stinson was modified to have the Mo content of JP '675, the combination would not result in the fine wire of the presently claimed invention. As disclosed in the specification, "[a]s a result of investigation into the causes, as the fine wire increases in thickness, there are evidently high Mo concentration phases and low phases, which are found to be causes of poor ductility." See Specification, paragraph 11. Thus, the presently claimed invention restricts the concentration ratio of Mo to be 1.8 or less. Therefore, even if the Mo content of Stinson is set in the claimed range, there is no motivation to establish the concentration ratio of Mo to be 1.8 or less. Although JP '675 describes a melt spinning method, the features of the presently claimed invention are not disclosed or suggested. JP '675 fails to remedy the deficiencies of Stinson.

Stinson and JP '675, taken alone or in combination, fail to disclose or suggest optimizing the concentration ratio of low Mo concentration phase and high Mo concentration phase as set forth in claim 1.

Regarding claim 15, the Office Action again states that "products of identical chemical composition cannot have mutually exclusive properties." Applicants respectfully disagree with this statement, as it fails to take into account the variations that may occur

when different processes are used to form the products (e.g., varying the heat and pressure applied to carbon results in formation of either graphite or diamond, which have very different properties). However, as mentioned above, Stinson does not have a composition that is identical to that of the present invention. Even if Stinson had the same composition, the characteristics and structure of a fine wire vary according to the cooling rate during solidification, and the temperature during any heat treatments. Structural features such as average grain size vary based on processing. Indeed, the specification discloses that deterioration of flexibility is likely to occur due to precipitation of an unknown phase that is not either gamma phase and/or epsilon phase, which is promoted by an uneven concentration of Mo. An uneven concentration of Mo is promoted by a high Mo content. See Specification, paragraph 29.

Neither Stinson nor JP '675 disclose or suggest the structural features of claim 15. Applicants submit that even if the Mo content in Stinson is set at the same range as that of the claimed invention, no teaching in either of Stinson or JP '675 would provide a person of skill in the art with any motivation to prepare a fine wire having an internal structure that is substantially composed of either gamma phase (Co base solid solution of face-centered cubic system) or epsilon phase (Co base solid solution of hexagonal close-packed system) only, or both of them only.

Finally, Applicants wish to point out that "structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where ... the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." MPEP § 2113, *citing In re Garnero*, 162 U.S.P.Q. 221, 223 (CCPA 1979). Claims 1 and 15 set forth structural

features of the claimed fine wire that are distinctive, and distinguish the claimed invention over the cited art.

Therefore, for at least these reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-4, 11-16 and 23-26 under 35 U.S.C. § 103(a) as obvious in view of Stinson alone, or in combination with JP '675.

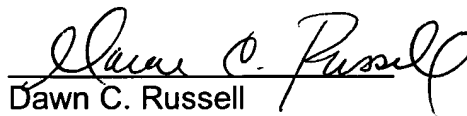
In view of the foregoing remarks and amendments, reconsideration and allowance of the pending claims is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration of the application, withdrawal of the outstanding rejections, allowance of Claims 1-4, 11-16 and 23-26 and the prompt issuance of a Notice of Allowability are respectfully solicited. Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 01-2300, making reference to Attorney Docket No. 108421-00096.

Respectfully submitted,


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Enclosure: Petition for Extension of Time (one month)